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ABSTRACT

The literature review examines the relationship of neurological impairment in young children with their social and emotional development. It identifies disorders of interaction and/or attachment and disorders of independence/dependence as specific maladaptive social and emotional states associated with neurological impairment. Three theoretical explanations for the obvserved relationships include: (1) direct effects of central nervous system pathology; (2) a secondary effect of the child's frustration; and (3) distorted social ecologies in families. The paper begins with a review of normal social and emotional development, notes the scope of the problem for children with neurological impairment, identifies the three possible etiological factors, and documents the specific types of affective disorders found most commonly in association with neurological impairment. Finally, the paper offers 10 implications for programming, including: parents should be helped to "read" their infant's behavioral cues; parents can be assisted in developing stable and predictable routines; respite services may be needed for parents under stress; parent groups should be encouraged; children should be provided experiences in which their attempts at independence are encouraged; and children should be allowed to experience some degree of normal day-to-day frustrations. Includes about 140 references. (DB)

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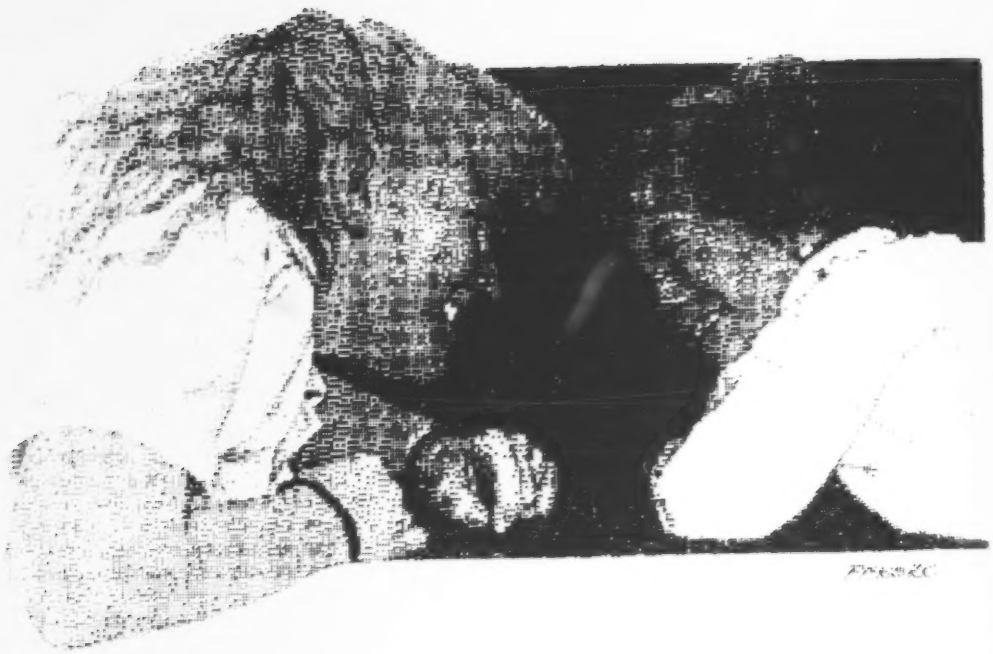

The Effect of Neurological Dysfunction on the Social and Emotional Development of Young Children

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Abstract

The presence of neurological impairment is consistently reported in the professional literature to have a deleterious effect upon the social and emotional development of young children. Although the exact etiological nature of this relaionship remains unresolved, theorized explanations include: (a) direct effects of central nervous system pathology, (b) frustration, and (c) distorted social ecologies in families. Specifically identified maladaptive social and emotional states include (a) disorders of interaction and/or attachment, and (b) disorders of independence/dependence. Intervention implications are noted.

The Effect of Neurological Dysfunction on the Social and Emotional Development of Young Children

Although the education of handicapped children for many years has focused on developing intellectual abilities, professionals are increasingly directing their intervention efforts at other areas of development. Over the past few decades, little systematic work has been conducted in the area of social and emotional development among young handicapped children. Strain (1982) and others (Bailey & Simeonsson, 1985) noted that a preponderance of young handicapped children exhibit significant deviations in social and emotional development and such problems can adversely affect cognitive development (Douglas & Hoffman, 1978). In a similar vein, it has been suggested that the social and emotional development of handicapped children may be the most crucial developmental area (Schloss, 1984), and are most sensitive to initial and long-term change (Bagnato & Neisworth, 1989). Skills in these areas are critical for enabling individuals to function within a group and accept the demands of society (Banus, 1971), the ultimate desired outcome of mainstreaming and other normalization efforts.

Overview of Normal Social and Emotional Development

In order to understand the development of deviant social and emotional behavior among young handicapped children, one must first have a perspective of developmental milestones in normal social and emotional skill acquisition. To begin with it is of utmost importance to acknowledge that infants are born with a natural tendency toward sociability with others in the environment (Damon, 1983). Condon and Sandor (1974), for example, have noted that as early as the first day of life, newborns regulate their behavior to synchronize with the patterns of human speech. Stern (1977) reported that at a few weeks of age, babies are able to "take turns" with the mother in expressing vocal sounds and bodily gestures. There is no evidence however, that infants consciously intend their actions to elicit specific social responses in others, as the initial reciprocity

in parent/child interactions is largely created by the parent's carefully coordinated responses to the baby's social cues. Thus, the full social significance of infant behavior is realized only in the context of the baby's initiations and deliberate continuances of interactions with another person or persons (Newson, 1974; Trevarthen, 1974).

Given the fact that current research has systematically failed to consider the sequential development of social and emotional skills in handicapped children, the body of knowledge regarding these processes occurring during the first 3 years of life are somewhat fragmented. In an attempt to provide an overview of the various aspects of development in these areas, this review of normal social and emotional development will be presented in a topical rather than a strictly developmental format.

Attachment. Attachment is a critical event in the development of social and emotional behaviors in newborns (Bowlby, 1969; Sroufe, 1979; Ainsworth, Blehar, Waters, & Wall, 1978). This term refers to the relationship between the infant and caregiver(s) which occurs during the first year of life, is long-lasting, and undergoes evolutionary change over time (Ainsworth et al., 1978; Bell & Ainsworth, 1972; Stayton & Ainsworth, 1973; Stayton, Ainsworth, & Main, 1973). The process of attachment does not emerge fully developed from birth, but develops during the first months and years of the child's life. This development is perhaps the most important early social and emotional event in the child's life (Douglas & Hoffman, 1978).

Several studies have suggested a distinct developmental progression of caregiver/child attachment (Bowlby, 1969; Ainsworth et al., 1978). Damon (1983) has summarized the various theoretical positions regarding the process of attachment, and has suggested that it consists of a fourstage process. During the initial stage of *preattachment* (from birth to 8-12 weeks), the baby responds indiscriminately to people in the environment through such behaviors as crying, babbling, and smiling. The child uses grasping and reaching behaviors during this period to secure objects in the environment and coordinates his/her gaze on other individuals in the environment. During the second phase, or *attachment in the making* (from 8-12 weeks to 7-12 months), the child attaches him/herself to the primary caregiver (e.g., the mother),and separation from this figure

often results in separation anxiety. In the third phase, or *clear-cut attachment* (from 7-12 months to second or third year of life) the child demonstrates locomotion abilities enabling him/her to venture out from the proximity of the mother,and is able to develop initial attachments to others in the environment. During the final phase of attachment, or *goal-corrected partnership* (from the second or third year of life onward), there is an increase in the number of people for whom the child shows strong attachments. The child during this period has developed a complex relationship with the primary caregiver, since the child is now able to understand the caregiver's goals, feelings, and point of view.

Self-concept. Children begin the process of developing a sense of self by learning to psychologically discriminate themselves from others (Santrock, 1983). During the early months of life, the child's explorations are restricted primarily to the body, though these explorations do not suggest that the child has awareness of his/her body as theirs (Berger, 1983). At approximately 2 months of age the social smile begins to emerge, which may mark the beginning of the child's awareness of self versus others (Sroufe, 1979). Around 4 months of age, the child's explorations move away from the body to other things outside of the self. As object permanence develops, babies first realize that other people exist independent of the infant. Bertenthal and Fischer (1978), for example, have shown that 6-month-olds reach out for their mirror image, and by 18 months of age can reach out and touch a mirror image of their noses, suggesting that they recognize their own image (Lewis & Brooks-Gunn, 1979). At around 9 months or so infants begin to exhibit interactions with peers which might be considered to be true social behavior. At this point, they begin to offer and take objects from one another (Vincze, 1971) and shortly thereafter begin to engage in primitive peer games such as run-and-chase or peek-a-boo (Eckerman & Whatley, 1977). Around age 2 years, children begin to respond to their names consistently and will use their names in reference to themselves. Finally, around 3 years of age children begin to develop some sense of gender by correctly using the labels of "boy" and "girl" for themselves, but may have difficulty applying the labels to ot~ers in the environment (Santrock, 1983).

Emotional responsivity. Of the relatively few studies directed at young children's

development of emotional responsivity, possibly the best known are those reported by Bridges (1931, 1932). Bridges noted that during the first weeks of life children's emotional behavior could be characterized as a form of undifferentiated excitement in response to all stimuli. However, around 3 weeks of age, distress in the form of trembling and crying can be observed. More positive responses (e.g., crying, cooing) begin to emerge around 2 months of age in response to environmental stimuli. Although a social smile is typically observable in many infants beginning at 3 weeks of age (Wolff, 1966), long-lasting smiles begin around 3 months of age (Dworetsky, 1984). Laughing is generally obvious at 4 months of age (Sroufe, 1979). Some researchers have suggested that this behavior is actually closely related to fear, with a buildup of tension causing fear and the subsequent tension release causing laughter (Sroufe & Waters, 1976). Behavioral indices associated with anger typically can be reliably measured around 7 months of age (Stenberg, Campos, & Emde, 1983). At around 6 to 9 months of age, fear is generally observable in many infants in the form of stranger anxiety, although it is far from a clear-cut phenomenon in all inf~nts due to fragmentary research efforts to date (Corter, 1973; Eckerman, Whatley, & Kutz, 1975; Ross, 1975). The positive emotion of delight appears to become differentiated around 1 year of age at which time affection and elation can be observed (Douglas & Hoffman, 1978). Finally, higher level emotions become distinguishable following the first year of life and include such developmental milestones as affection, the verbal expression of feelings, and pride, love, and guilt (Dworetsky, 1984; Sroufe, 1979). It should be noted that assessment of infant development in general is subject to severe limitations in instrumentation, and this may be especially true in measuring such subjective qualities as emotional responsivity.

Independence/dependence. Infants have been characterized as being active explorers of the environment. Shortly after birth, evidence of their systematic visual exploration (Cohen & Salapatek, 1975), their ability to manipulate objects (Uzgiris & Hunt, 1975), and their general interest in moderately novel experiences (Kagan, 1976) can be observed. Thus, it appears that exploration is a very early source of learning about the environment.

Attachment and a child's development of a sense of independence have been shown to be

closely linked. Ainsworth, Bell, and Stainton (1971), for example, examined the manner in which 1-year-old infants demonstrated attachment and exploration in a home setting. It was found that those who were securely attached appeared to fluctuate between exploration of the environment and seeking out their mothers in an unstressed manner. Conversely, children who were insecurely attached exhibited considerable difficulty in exploring the environment, with these explorations characterized by uncertainty and stressful interactions with the environment. Thus, as Santrock (1983) has observed, a secure attachment to a primary caregiver does not necessarily coincide with greater levels of dependence. Independence, therefore, apparently evolves from a secure attachment.

Several theories have been offered in the professional literature to account for the development of independence in young children. Primary among these are the theoretical positions of Erikson (1963) and Mahler (1965).

From an Eriksonian perspective (Erikson, 1963, 1968), the young child has to resolve two crises during the first 3 years of life. In the first crisis, *trust versus mistrust*, the child must come to develop a sense of trust in his/her interactions with the primary caregiver during such life-sustaining activities as feeding, toileting, and maintaining warmth. This sense of trust developed during the first year of life serves to facilitate the acquisition of a positive attitude toward life and people in general. A second stage, *autonomy versus shame and doubt*, is characterized by the toddler's desire to rule his/her own actions and body. If he/she fails in the effort to do so, shame and doubt in his/her abilities may arise.

More recently, Mahler's (1965; 1979a; 1979b) reformed view of psychoanalytic theory suggested that the child acquires a sense of separateness along with a sense of relatedness to the world through a process called *separation-individuation*. This developmental process is characterized by the child's emergence from the mother (separation) and the child's acquisition of individual characteristics (individuation) (Santrock, 1983). The process is not always a smooth one, since toddlers demonstrate periods when they desire constant attention from their mothers as well as exhibiting frustration at their inability to be truly independent. The long-range implications

of failing to resolve this stage are evidenced in individuals who fear intimacy or independence in later years.

The research data base on independence during the earliest years has received far less attention than other aspects of social and emotional development. Infants' explorations of the environment, however, have been shown to be affected by physical characteristics (Bjorklid-Chu, 1977), social characteristics (Menzel, 1974), the opportunity to follow others (Hay, 1977, 1980), and the presence of an older sibling (Samuels, 1980). These findings, especially those concerning physical and social characteristics,have far-reaching implications for the development of independence in neurologically impaired children.

Peer relationships. Although some individuals have suggested that little research has been conducted regarding early peer interactions (Apolloni & Cooke, 1975), a great body of literature exists pertaining to such interactions (Mueller & Vandell, 1979; Vandell & Mueller, 1980; Vandell & Wilson, 1987). Initially, infants react to each other's cries and appear to be minimally aware of one another by 3 months of age (Field, 1979; Fogel, 1979). At 6 months they look, smile, and reach toward other infants (Vandell & Mueller, 1980). By 1 year of age, more complex interactions begin to emerge (Hartup, 1983). Six-month-olds are more likely to be social with one another when toys are present (Hay, Nash, & Pedersen, 1983), particularly when only one toy is provided for both.

During the second year of life, children's social skills as well as peer interactions remain at a rudimentary level (Hartup, 1983), although the complexity and amount of peer interaction is considerably greater than that during infancy (Eckerman, Whatley, & Kutz, 1975). Some researchers have suggested that peer relations during the first 2 years may pass through three distinct stages (Mueller & Lucas, 1975; Mueller & Vandell, 1979). During the first stage, the *object-centered stage*, children occasonally interact with one another, but most of their attention is focused on objects or toys. During a second stage beginning at about 1-2 years of age, the *simple interactive stage*, infants respond primarily to each other and prefer social play to solitary play. Around 10 age 2, children enter the *complementary interactive stage*, at which time many complex

social interactions occur. Mueller and Brenner (1977) have noted that imitation becomes more likely at this stage,with positive social interactions frequently accompanied by such responses as smiling and laughing.

Emotional displays also become more frequent during the second year. Although an emotional tone is not discernable in l-year-old interactions (Rubenstein & Howes, 1976), emotions are more clearly evident during interactions at age 2 (Mueller & Rich, 1976). During interactions at this stage, children tend to take careful note of one another's emotional expressions and dispositions before acting or responding socially.

At around age 2, children's play activities appear to differentiate noticeably. Parten (1932) observed six different types of play behaviors which might be exhibited during the early childhood years. In general, most children aged 2-3 years will exhibit onlooker or solitary play (watching others but not participating in play activities which are considered important functions (Rubin, Maioni, & Hornung, 1976) . These instances of play may serve as foundations for later,more sophisticated interactions. Moore, Evertson, and Brophy (1974) have indicated that approximately 50% of all solitary play activity involves educationally relevant activities while another 25% involves large muscle activity. Some investigators have speculated that parallel play is an important prereqlisite to higher forms of play since social interactions are facilitated by proximity to children (Mueller & Brenner, 1977) (See Table 1).

Scope of the Problem

Certain handicapping conditions may predispose children to have significantly more problems in the acquisition of positive social and emotional skills (Pond, 1961; Richardson & Friedman, 1974). Children who evidence neurological impairments are at particular risk for developing maladaptive social and emotional behaviors (Graham & Rutter, 1968; Pond, 1961; Rappaport, 1961).

In the most general sense, neurological impairments and subsequent dysfunction refer to the presence of incomplete, abnormal, or impaired functioning of the neuromuscular systems (Banus, 1971). Specific handicapping conditions which could be categorized under the rubric of

neurological impairment and dysfunction include such conditions as cerebral palsy, epilepsy, autism, and hyperactivity (Haslett, 1978). The effect of the neurological impairment and dysfunction associated with social and emotional development has been a source of speculation for over 30 years. Mittleman (1954) suggested that normal personality development may be restricted in children who have atypical motor development. Rappaport (1961) indicated that neurological impairments operate from the neonatal period and before,and its effects are interwoven intimately with all aspects of personality development. Richardson and Friedman (1974) suggested that neurological dysfunction, whether subtle or obvious, is a contributing factor to later emotional disabilities. Rosenbloom (1971) commented on the inherently interactive nature of a child's social, intellectual, physical, and emotional development, specifically noting the potentially deleterious effects that impaired motor functioning might be expected to have on social and emotional development.

Numerous studies are evident in the professional literature which suggest that certain neurological impairments are associated with high levels of emotional and social deviant behavior (Denhoff & Holden, 1954; Glick, 1953; Graham & Rutter, 1968; Jones & Maschmeyer,1958; Storrow & Jones, 1960; Rosenbloom, 1971). However, these studies typically have failed to comprehensively describe the social and emotional implications of the neurological impairment and its subsequent abnormal motor development during the early years of life. The remainder of this paper will review the available literature that is relevant to young children who have neurological impairment and dysfunction, and note specific implications for intervention. For the purposes of this presentation, neurological impairments which do not result in physical manifestations (e.g., epilepsy) will not be included.

Etiological Factors for Social and Emotional Problems

Given the fact that a high incidence of social and emotional problems have consistently been reported in the professional literature with regard to children who have neurological dysfunction(Denhoff & Holden, 1954; Graham & Rutter, 1968; Jones & Maschmeyer, 1958; Rosenbloom, 1971), several theoretized etiologies have been proposed. Hourcade and Parette

(1984) have noted that these include (a) direct effects of the central nervous system pathology, (b) frustrations and other secondary problems evolving from the motor handicap, and (c) an ecological model, involving both distorted parent-child interaction patterns as well as maladaptive interaction patterns between the child and others in his/her environment.

Central nervous system pathology. In the process of brain maturation, Connor, Williamson and Siepp (1978) have stated that motor skill acquisition is contingent upon the higher centers of the brain gradually imposing inhibitory control over responses from lower centers. In neurological dysfunction, this dynamic process is inhibited, which can significantly alter the overall developmental progress of the child. Insult to the brain during the prenatal period or the period of early childhood may result in the inhibition of sensory messages, preventing these impulses from reaching and or/becoming integrated at the highest levels of the central nervous system. Instead, these sensory messages may become "short-circuited" to lower regions of the central nervous system. Consequently, higher centers of the brain may never reach a stage of full maturation and control over the lower centers, resulting in the child's exhibition of the stereotyped and atypical movement patterns usually associated with abnormal muscle tone (Bobath, 1967; Douglas & Hoffman, 1978). The primary emphasis of the remainder of this paper will focus on the emotional and social development of neurologically impaired children who evidence this abnormal muscle tone or other physical anomalies

There is a significant body of research which suggests that brain damage is a primary contributing variable to adverse social and emotional adjustment (Graham & Rutter, 1968; Hertzig & Birch, 1968; Hourcade & Parette, 1984; Pond, 1961; Richardson & Friedman, 1974; Haslett, 1978). Pond (1961), for example, has reported an inordinately high rate of unhappiness and maladjustment throughout the lives of neurologically impaired children, including those with cerebral palsy, epilepsy, head trauma, meningitis, and birth anoxia. Haslett (1978) has noted that dysfunction in the central nervous system may affect the brain's stimuli-regulating mechanisms, resulting in such maladaptive behavioral states as hyperresponsivity or hyporesponsivity. Thus, many social and emotional problems may evolve from irregularities in these control mechanisms in

attention management, sensory integration, and frustration tolerance, perhaps accompanied by subtle alterations in autonomic nervous system functioning.

However, the implied fixed nature of the relationship between central nervous system pathology and social and emotional development has been questioned. As Haslett (1978) has pointed out, reports suggesting brain damage as the primary determinant of social and emotional problems in the child have typically based their correlations on the underlying assumption that organic factors are structural, and therefore fixed and invariable determinants of the child's social and emotional characteristics. A number of reports have studied behavioral differences among nonhandicapped infants and the subsequent emergence of personality and behavioral patterns (e.g., Birns, 1965; Thomas, Chess, Birch, Hertzig, & Korn, 1963). Though dependent to some degree upon the conceptual framework from which the studies were conducted, the obtained relationships between early and later exhibited behavioral characteristics has ranged from promising to modest or poor. Sameroff (1975) pointed out that early deviance and even gross insults (e.g., perinatal anoxia) would be expressed in the social and emotional repertoires of children only when coupled with poor socioeconomic and familial factors.

Frustration. A second etiologic category contributing to the presence of social and emotional problems in children manifesting neurological impairments and dysfunction centers around the secondary problems of frustration which evolve from the motoric limitations imposed by the neurological disability (Hourcade & Parette, 1984), which in turn limits the child's potential participation in play behaviors and general social interaction. It has been suggested (Freeman, 1967; Haslett, 1978) that the lowered levels of motoric exploration and activity of the child with neurologic impairment and dysfunction inhibit normal development of personal autonomy and personality development, resulting in anxiety and/or frustration. These decreased levels of mobility and environment exploration potential can significantly limit a child's play behaviors, as well as contribute to a subsequent lack of those adaptive behaviors necessary for independent functioning (Rosenbloom, 1971; Sirvis, Carpignano, & Bigge, 1976). A similar position was taken by Freeman (1970), who noted that children with neurological impairments were likely to evidence a

prolonged period of dependency, thereby experiencing high levels of frustration accompanied by decreased abilities and opportunities for mastering environmental tasks. Such social behaviors as play, exploration, and competition may be marginal or nonexistent.

Maladaptive social ecological patterns. A third causal factor which has been proposed to explain the overrepresented presence of social and emotional problems in young children who have neurological impairments and dysfunction is that of maladaptive interaction patterns in the child's socio-ecological environment (Hourcade & Parette, 1984). From this theoretical perspective, social and emotional problems in the child evolve from the inherently reciprocal nature of the relationship between the child with neurological impairment and the parents, with both parties contributing to the problem. Several early studies have emphasized that unfavorable parental attitudes toward the child with neurological impairment were significant contributing variables with regard to maladaptive social and emotional behaviors (Allen & Pearson, 1938; Denhoff & Holden, 1954; Fitzgerald, 1951; Glick, 1953). Other studies of children with cerebral palsy (Nussbaum, 1962; Miller, 1958) have found a strong relationship between children's adjustment and parental attitudes, suggesting that these attitudes may be more significant than the specific handicapping condition itself.

As in the general population, the presence of specific behavioral aberrations in mothers can adversely affect the social and emotional development of the child with neurological impairment and dysfunction. Graham and Rutter (1968), for example, found that maternal problems such as irritability, loss of temper, worrying, depression, headaches, and nervous breakdowns were significantly correlated with the presence of social and emotional problems in their children with brain damage and dysfunction.

Haslett (1978) has maintained that professionals frequently fail to realize the importance of a neurologically impaired child's role in shaping responses to him/herself. Further support for this position was proffered by Brassell (1977), who reported that seriously impaired infants were less likely to engage in those positive social interactive behaviors which would be most likely to invite parents to supply both motorically and intellectually stimulating events to the child.

Conversely, those children were also less likely to provide positive feedback to the parents regarding those interactions which do occur, resulting in probable decreased parental commitment to and likelihood of future interactions with the child.

Parental and sibling overprotection of children who have neurological impairments may be an additional contributory cause of social and emotional problems. Freeman (1970) suggested that many problem behaviors in children with neurological impairment may be attributable to overprotective attitudes or excessive pressures from family members, who themselves typically face high levels of stress and emotional conflict (McMichael, 1971).

The visibility of a handicap has also been linked with the social and emotional adjustment of handicapped children (Bailey & Wolery, 1984; Cruickshank, 1952; Goldberg, 1974; Guralnick, 1982; Langlois & Downs, 1979). Even young children appear to be capable of recognizing certain neurological impairments (Weinberg, 1978) . In general, handicapping conditions which are inherently high profile and most visible serve as a more negative social stimulus, producing greater levels of undesirable social discrimination in children (Dion, 1972; 1973; Dion, Berscheid, & Walster, 1972; Safilios-Rothschild, 1970; Wright, 1960). The visibility of neurological impairment also significantly affects the attitudes of others. A number of reports (English, 1971; English & Palla, 1971; MacDonald & Hall, 1969; Siller, Ferguson, Vann, & Holland, 1967) have concluded that more negative attitudes are exhibited by nonhandicapped children toward children who have visible handicaps than toward children who have unnoticeable handicapping conditions. Since many neurological impairments (e.g., cerebral palsy) result in highly visible characteristics, these conditions might thus be expected to elicit these more negative attitudes.

Specific Problems in Social/Emotional Development

Regardless of the specific etiologic base (or bases) for the presence of social and emotional problems in children evidencing neurological impairments, certain specific types of affective disorders may be identified as being most prevalent. Douglas and Hoffman (1978) have speculated that two particular maladaptive affective states are most common in this population: (a) disorders of interaction and/or attachment, and (b) disorders of independence/dependence.

Disorders of interaction and/or attachment. Children with neurological dysfunction may evidence difficulties with *signaling* and *approach* behaviors in life. Such signaling behaviors as crying, cooing, and babbling are crucial in the development of attachment, since they bring the mother closer physically (and psychologically) to the child (Damon, 1983). Similarly, such approach behaviors as smiling, clinging, nonnutritional sucking, and visual tracking may serve to bring the child psychologically closer to the mother. Deficiencies in these two systems may adversely affect the comprehensive attachment process (Douglas & Hoffman, 1978). For example, a child's cry may be ongoing and have a characteristic distressing quality. If the child with neurological impairment is picked up by the caregiver, abnormal muscle tone may inhibit the child from responding to the caregiver's approach in an appropriate and mutually satisfying manner. Douglas and Hoffman (1978) have noted that such inappropr;ate child responses might include arching of the back, flaccid muscle tone, or other unnatural adjustments to parental handling. This failure of the infant with neurological impairment to appropriately "mold" to the body of the caregiver may be compounded by the presence of physical discomfort in the infant to caregiver handling.

Eye contact, a prerequisite to more complex social interactions, may be another source of difficulty for neurologically impaired children. This is especially true of those infants and young children with cerebral palsy, in which visual disorders are a frequent concurrent disability (Smith, 1963; Donlon, 1976). Bleck (1982) stated that a significant number of children with cerebral palsy are hyperopic (farsighted) or myopic (nearsighted). Other visual problems observed in these children include esotropia (crossed eyes), and failure to employ an upward gaze due to lack of muscle control in the neck or inadequate occular control. Crothers and Paine (1959) have suggested that strabismus (ocular motor imbalance) may occur in as many as 75% of all cases of cerebral palsy. Given these visual difficulties, eye contact with caregivers and other individuals in the child's environment may fail, or at least be slow to develop. These problems may be compounded by the child's abnormal muscle tone and lack of control of the head, potentially preventing the child from assuming a position that permits eye contact with others.

Smiling, an important social approach behavior, may also be either absent or distorted in the child with neuromotor problem (Douglas & Hoffman, 1978). Children with athetosis, for example, may have great difficulty in achieving and/or maintaining a socially pleasing smile, which may instead be replaced by unattractive grimacing or other facial movements.

If, as Douglas and Hoffman (1978) suggested, the signaling and approach systems are deficient in the child with neurological impairment, mutually satisfying positive interactions between the child and the caregiver are less likely to occur. The bonding process between the caregiver and the child thus is weakened. This may be especially true in those cases of highly visible handicapping conditions (Berscheid & Walster, 1972; Dion, 1972).

Another group of factors influencing the development of disorders of interaction and/or attachment in children with neuromotor problems is that of the behavioral patterns and overall temperament of the child (Chess, Rutter, & Birch, 1963). While these children may exhibit a wide range of personality characteristics, specific types of behaviors likely to be engaged in include abnormally high or low activity levels, low regularity , low adaptability, high intensity, perseveration, and distractibility (Thomas et al., 1968; Thomas & Chess, 1973; Korner, 1971). These children may also demonstrate irregular sleep, eating, or elimination patterns, making it difficult for the caregiver(s) to adjust to the child's constantly changing routines, further inhibiting the development of appropriate social interactions.

Similarly, as Connor et al. (1978) posited, an ill-tempered and negative child is considerable more difficult to handle and interact with than a child who interacts with persons and the environment in a more positive manner. Temperament problems exhibited by infants otten serve to negatively affect caregiver reactions to the child (Ritvo, McCollum, Onwake, Provence, & Solnit, 1963). Parents lacking resources or who transfer inappropriate misconceptions about the child's disability onto the child may be additionally susceptible to inaccurate magnification of the true actual limitations inherently imposed by the condition, thus compounding the already difficult parenting tasks.

The presence of neuromotor impairment in the child may also serve to restrict both the

quantity and quality of those environmental experiences in which the child does engage. From a Piagetian perspective, such experiences are seen as crucial for the later acquisition of more advanced cognitive structures. If these experiential limitations inhibit the child's ability to discriminate among people and/or develop a rudimentary sense of object permanence during the first year of life, the development of later strong attachments with caregivers may be significantly impaired (Douglas & Hoffman, 1978).

Parette and Hourcade (1983) have pointed out that intervention professionals may inadvertently impose potential cognitive limitations on the child with neuromotor problems through the utilization of such therapeutic intervention techniques as occupational and physical therapies. By encouraging a child to assume more normalized postures and movement patterns through limiting the child's use of abnormal motoric adaptations, the child's ability to effectively interact with the environment may be inhibited, at least on a transitory basis. This could potentially result in abnormal cognitive and affective development.

The aforementioned stress the atypical infant's role in this social development process. However, the role of the child's primary caregiver(s) must also be empllasized. In the early months of the infant's life, the caregivers typically experience several stages of reactions to the presence of neurological impairment in the child (Blacher, 1984). As Douglas and Hoffman (1978) commented, specific maladaptive parental behaviors manifested during the first months include rejection and failure to respond to the infant's earliest behavioral cues, apathetic handling of the child, and isolation from other individuals and other socially enriching experiences.

Many children who have neurological impairments will require frequent periods of separation from the caregiver so that such services as medical and/or therapeutic intervention might be provided. These periodic episodes of separation might well have far-reaching implications for the social and emotional development of the child (Bowlby, 1951; Kennell, Jerauld, Wolfe, Chesler, Kreger, McAlpine, Steffa, & Klaus, 1974; Leifer, Leiderman, Barnett & Williams, 1972). Bowlby (1951) suggested that repeated long-term separations of the child from the caregivers might have three potentially adverse affective outcomes in the child: (a) protest by the

child in response to the caregiver's departure; (b) despair, especially in those cases of separation of more than a week; and (c) detachment. This third outcome is the most potentially significant, since the child adapts to the new routine of the caregiver's absence, directing his/her interest toward toys and other objects while ignoring or actively rejecting subsequent caregiver advances. A number of other researchers (Graham, Rutter, & George, 1973; Rutter, 1972, 1979) have drawn similar conclusions in documenting a variety of social and emotional disturbances evolving from early shortcomings in the relationships between the child and caregiver(s). However, those children who have initially secure ties with their caregivers, or who engage in positive social interactions with other caregivers during the separation, are less likely to experience disruptions in the attachment process upon reunion with the original caregiver(s) (Ainsworth et al., 1978; Robertson & Robertson, 1971). Of particular relevance is the growing body of research suggesting that early parent-child interactions are important indicators of future social and emotional competence (Clarke-Stewart-1973; Field, 1983; Matas, Arend, & Sroufe, 1978; Tizard & Joseph, 1970; Tizard & Rees, 1974, 1975; Tizard & Hodges, 1978).

There also appears to be some evidence that the quality of early attachment can influence peer-group behaviors during the preschool years (Lieberman, 1977; Waters, Wippman, & Sroufe, 1979). Waters et al. (1979), for example, found that infants who were found to have insecure attachments at 15 months of age differed from infants found to have secure attachments on a variety of variables when observed in interactions with peers at 3 1/2 years. The children with secure attachment histories were observed to be more forceful, self-directed, and curious, while the children with histories of insecure attachment were found to be unaware and apathetic.Thus, as Damon (1983) noted, the quality of a child's early attachment has important long-range developmental consequences. However, this does not suggest that all aspects of a child's future social and emotional development are dependent upon these early relationships. The work of Kagan and his associates (Kagan, 1976; Kagan & Brim, 1981) have outlined the possibilities of recovery from these potentially deleterious early interactional deficiencies in infant-caregiver attachments through the provision of specific intervention programs.

Disorders of Independence/Dependence

In addition to the difficulties in the area of interaction and/or attachment, the child with neurological dysfunction may also experience problems in independence and dependence (Douglas & Hoffman, 1978). These children demonstrate a multiplicity of motoric problems which may adversely affect their degree of independence. The frequent presence of exagerated reflexive patterns (Paine, 1964; Paine & Brazelton, 1964) may lock the child into abnormal postures which inhibits movements and subsequent interactions with their environment. It might be anticipated that these children would demonstrate considerably more dependence upon others for such services as physical care, environmental mobility, and the acquisition of stimulating environmental experiences. When the rigorous motoric demands placed on nonhandicapped children in the quest for increasing independence in environmental interactions is considered, the inherent frustrations experienced by children with neurological impairments in similar ventures are obvious.

Perhaps one of the most difficult problems the child with neurological impairment encounters in this area of independence is that of self-acceptance. Sirvis, Carpignano, and Bigge (1976) noted that the limitations imposed on the child with neurological disability can result in the child's subsequent development of a poor body image. The manner in whlch the child perceives his/her body becomes increasingly important during later interactions with peers, since comparisons with nondisabled counterparts are inevitable. These self-perceptions may be distorted and negatively influenced by the attitudes of peers, since nonhandicapped children may see children with handicaps as younger (Langlois & Downs, 1979) or have other negative attitudes toward the child (Raupp, 1985).

The presence of a poor or otherwise nonfacilitative self-concept may be noted through several child characteristics. Rappaport (1964) reported that five characteristics suggestive of an inadequate self-concept are observable among children with neurological impairment: (a) low levels of frustration; (b) nonparticipation in challenging environmental experiences; (c) attempts at overcompensation through the utilization of those skills which do exist; (d) controlling and manipulation of other individuals; and (e) power struggles between the child and others.

The role of the parents is a crucial one in the development of independent-dependent behaviors during the early years of the child with neurological impairment. Parents are often targeted as the primary cause of the development of overdependence in the child (e.g., Douglas & Hoffman, 1978). Specifically, this phenomenon is hypothesized to develop through parental efforts to circumvent having to spend what they see as an unnecessarily large amount of time as the child independently dresses, eats, or engages in other timeconsuming self-care activities.

Additionally, as Douglas and Hoffman (1978) go on to point out, many parents want to shield their child from potentially painful experiences, which results in a lack of support and encouragement for the child's natural strivings for independence. Also, the parental feeling of being needed may be or may become very satisfying or reinforcing for the parents of the child with neurological impairment. Thus these parents may avoid developing in their child those skills likely to increase the child's independence and simultaneously decrease the child's "need" for his/her parents. Specific indicators of parental overprotectiveness might include such behaviors as unwillingness to leave the child unattended, treating the child as though he/she were much younger, and sheltering the child from interactions with others (see Table 2).

Implications

Based on the aforementioned issues evolving from the social and emotional development in young children who have neurological impairment, several recommendations have been offered Guralnick (1982). Early intervention professionals must begin to focus research investigations on the social skills of children with different handicapping conditions and different manifestations of those conditions, since relatively little information exists in this area. It may be that different types of neurological impairments are associated with specifically differing emotional states, thus warranting different social and emotional skill intervention programs. Also, professionals should strive to arrange learning environments such that social situations inherent in those environments capitalize on children's social strengths, and promote greater levels of independence.

An additional area of concern is that programming designed to address these affective needs typically has not been a focal point of early intervention programs. In those programs which have

incorporated social and emotional skills components, the major emphasis has traditionally been on remediation as opposed to assessment (Cooke, Apolloni, & Cooke, 1977; Strain & Timm, 1974; Warfield, 1974). This finding may be of some concern to professionals, since theoretically remediation efforts are thought to be most effective when based on a precise assessment of the child's strengths and weaknesses (Novak, Olley, & Kearney, 1980). Haley, Hallenborg, and Gans (1989) have provided an excellent overview of the process of assessment for this population, noting that it should involve considerations of purpose, test content, reference, mode of administration, and sequential modeling of the test.

With regard to intervention efforts of the parents of the child with neurological dysfunction, a number of professionals have contributed excellent recommendations (Bailey & Wohlery, 1984; Douglas & Hoffman, 1978; Joel, 1975; Ross, 1964; Sirvis et al., 1976; Wright, 1960). These might be summarized as follows:

1. During infancy, the child should be provided with a warm and nurturing environment. If parents are accepting of the child's neurological impairment and go on to generate feelings of reassurance, the child will develop greater feelings of security, contributing to later enhanced levels of social and emotional competence.

2. Parents should be helped to "read" their infant's behavioral cues. Training procedures in these skills will enhance the quality of the parent-child interactions.

3. For temperamentally difficult children, parents can be taught to respond to their infant's cries more quickly. Over time, this should decrease the total number of crying episodes, as the infant's feelings of security are enhanced.

4. Parents can be assisted in developing stable and predictable routines for their children. These consistent routines should result in fewer episodes of interactional difficulty between the child and the parents.

5. In those instances where parental stress appears to be a significant contributory agent in the development of social and/or emotional problems in the child, respite services should be arranged. Such arrangements may need to be provided on a regular basis to provide an adequate emotional foundation from which adaptive affective skills in the child may develop.

6. A most useful source of practical peer support for parents is that of active parent groups. In some cases, additional individualized or family counseling or therapy may be appropriate.

7. When parents appear to be overprotective of the child, information should be supplied which emphasizes the child's strengths, as well as suggestions for capitalizing on those strengths in the home environment. For example, the parents might be encouraged to leave the child alone during specified periods of the day to facllitate the development of independent play skills. Parents may require both training *and* encouragement in teaching their child independent self-care skills.

8. Since the perceptions of others have such a great impact on the development of a child's self-concept, the accepting attitudes of significant others in the child's social environment, especially the child's primary care-givers, are crucial.

9. Children should be provided with experiences in which their attempts at independence are encouraged. Parents and others can do much to facilitate in the child the development of a sense of inquisitiveness and desire to master control over the environment.

10. The child should be allowed to experience some degree of normal day-to-day frustrations, since such experiences are part of a normalized lifestyle. Such coping skills are especially crucial later in life.

In addition to the motoric difficulties inherent in neurological impairments, many children with brain damage also evidence emotional and social disabilities. Through the provision of intervention services designed to address the child's affective as well as psychomotor needs, the potentially deleterious effects of the child's primary central nervous system disability upon subsequent social and emotional development may be minimized or completely avoided.

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Table 1

Normal Social and Emotional Development

Age	Attachment	Self-Concept
Birth to 3 months	Indiscriminate responding; social contacts through crying, babbling, and smiling	Explorations restricted primarily to body (looks at hands, sucks fingers and toes)
4 to 12 months	Social responsiveness to familiar others noted; discriminates primary caregiver from others (stranger anxiety)	Explorations begin to move away from body and other materials; formation of concept of constant self; responds to own name
12 to 18 months	Multiple attachments to significant others	Differentiates self as active agent from others
18 to 24 months	Some ongoing distress at separation; multiple attachments and greater coping ability	Featural recognition of self; verbal labeling of self
24 to 36 months	Enhanced coping skills following separation; minimal distress upon being left with strangers	May know own gender

Table 1 (cont.)

Normal Social and Emotional Development

Age	Emotional Responsivity	Independence/Dependence	Peer Relations
Birth to 3 months	Differentiation of delight and distress		
		Major time of concern for development of trust v. mistrust	
4 to 12 months	Fear, disgust, joy, and active laughter		
12 to 18 months	Affection, elation, anxiety, angry moods, uncooperativeness	Independent locomotion; beginnings of autonomous behaviors	Begins to use toys as a medium for play and peer involvement
18 to 24 months	Verbally expresses feelings, shame, defiance		Positive interchanges and affective displays become more common as well as negative interchanges
24 to 36 months	Pride, love, guilt, intentional hurting	Major time for concern for autonomy v. shame and doubt (Erikson); developing a sense of initiative	Peer interactions take form of trading words rather than objects

Adapted from: Connor, F.P., Williamson, G. G., & Siepp, J. M. (1978). *Program guide for infants and toddlers with neuromotor and other disabilities.* New York: Teachers College Press; and
Sroufe, A. L. (1979). Socioemotional development. In J. D. Osofsky (Ed.), *Handbook of infant development* (pp. 462-516). New York: Wiley.

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Table 2

Specific Social and Emotional Problems Among Parents and Young Children Who Have Neurological Impairments

Area	Person	Types of Problems
Disorders of Interaction and/or Attachment	Child	• Inappropriate or undeveloped signalling and/or approach behaviors • Poor eye contact • Absent or distorted smile behavior • Difficult temperament (abnormal activity evels, low regularity, low adaptability, nigh intensity, perseveration, distractibility) • Restricted interactions with the environment • Separation-based detachment and despair • Distorted interaction patterns in peer group
	Parent	• Parental rejection of child • Inappropriate responding to infant behavioral cues
Disorders of Independence/Dependence	Child	• Exaggerated reflex patterns which imit motoric ability to interact in environment • Unnecessary dependence on caregivers for basic and miscellaneous needs • Poor self-acceptance/body image • Low frustration level • Avoidance of challenging or stressful experiences • Overcompensation • Manipulation of others in the environment
	Parent	• Parental overprotectiveness • Parental rejection

Adapted from: Connor, F. P., Williamson, G. G., & Siepp, J. M. (1978). *Program guide for infants and toddlers with neuromotor and other disabilities.* New York: Teachers College Press.

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